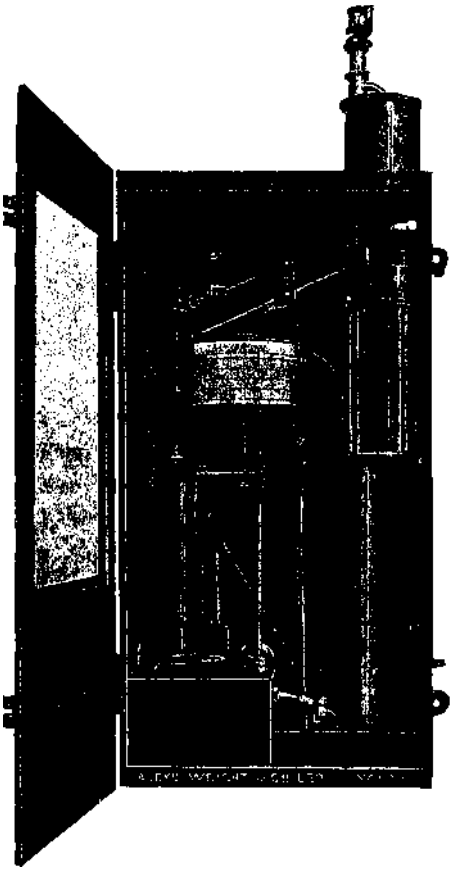
of leakages and faults in the brickwork setting—in other words to know how far the furnace approximates to its task of converting the carbon completely into carbon dioxide without dissipating its heat on excess air.



In the "Sarco" recorder, fig. 2, supplied by the Sarco Engineering & Trading Co., Ltd., connection is made with the flue by a i-in. pipe from which a f-in. tube leads to the instrument, and to ensure rapid movement of the gases a return tube connects the recorder with the base of the chimney, or other convenient outlet. Analyses are completed and the results recorded at the rate of 20 to 30 per hour with an accuracy well within f per cent of the carbon dioxide actually present in the gas.

The S. A. W. patent recorder (fig. 3), manufactured by Alexander Wright & Co., Ltd.," of Westminster, consists of a gas-extracting chamber into which a large

sample of gas is drawn from the flues by a water injector. From this a smaller measured sample is removed and delivered to the potash container, and a small gasholder with rising bell carrying a graduated scale on top receives the gas, after removal of the carbon dioxide, and records its volume. This is simultaneously indicated on a rotating chart for permanent reference, and determinations are completed in about three minutes.

Fig. 3.—CO_2 Recorder

" Arkon " combustion recorders are placed on the market by Walker, Crosweller, & Co., London, in several forms. Model F is water-driven, but, where there is difficulty

in arranging water-supply or outlet, model G may be substituted in which a |-h.p. electric motor is employed to draw the gas samples to the recorder and to pass them through the analysis. This type is found suitable for power stations and engine-rooms where wiring is easy but water service sometimes difficult. Fig. 4 shows the method of working of the water-driven model. Water falling into tank 10 and passing out by .13 maintains a constant level. The tube n is perforated inside the tank 10 so that water enters it and, falling down, draws the sample through gas burette i, which is connected with the flue. A second stream of water falls through